REMARKS

This Amendment is fully responsive to the non-final Office Action dated September 9, 2009, issued in connection with the above-identified application. Claims 14-26 are pending in the present application. With this Amendment, claims 14 and 26 have been amended. No new matter has been introduced by the amendments made to the claims. Favorable reconsideration is respectfully requested.

In the Office Action, claims 14-16 and 23-26 have been rejected under 35 U.S.C. 102(b) as being anticipated by Ohi et al. (U.S. Patent No. 5,847,688, hereafter "Ohi").

The Applicants have amended independent claims 14 and 26 to more clearly distinguish the present invention from the cited prior art. For example, independent claim 14 (as amended) recites the following features:

"[a] matrix-type display apparatus which drives a display panel including a plurality of pixels disposed in matrix form and displays an image, comprising:

a converting portion adapted to gamma-convert an input video signal, using n (which is an integer of two or above) pairs of gamma-characteristics each made up of first and second gamma-characteristics different from each other, the gamma-characteristics being a transmittance characteristic according to an input level, the n pairs of gamma-characteristics being different from each other; and

a selecting portion adapted to specify a transmittance to be used for display based on the input video signal, to select one pair of gamma-characteristics from among the n pairs of gamma–characteristics according to the specified transmittance to be used for display, and to select an output supplied to the display panel from among the 2n outputs which are gamma-corrected by said converting portion, so that a ratio between a first distribution area of pixels driven by the video signal gamma-corrected by use of the first gamma-characteristic of the selected pairs of gamma-characteristics and a second distribution area of pixels driven by the video signal gamma-corrected by use of the second gamma-characteristic of the selected pairs of gamma–characteristics is equal to a distribution area ratio specified in advance for the selected pairs of gamma-characteristics and according to the transmittance to be used for display, a

different pair of gamma-characteristics and a different distribution area ratio are used." (Emphasis added).

The features emphasized above in independent claim 14 are similarly recited in independent claim 26 (as amended). That is, independent claim 26 is a corresponding method claim having steps directed to the features of the apparatus of independent claim 14. Additionally, the features emphasized above in independent claim 14 (and similarly recited in independent claim 26) are fully supported by the Applicants' disclosure (see e.g., Figs 2-6, 8-10 and 12-18 as well as the corresponding description of the figures).

As noted above, claims 14 and 26 have been amended to point out that the n pairs of gamma-characteristics are different from each other; and according to the transmittance to be used for display, a different pair of gamma-characteristics and a different distribution area ratio are used.

For instance, in Figs. 2-4 of the Applicants' disclosure, a first pair of gamma-characteristics is made up of the gamma-characteristic γlA and the gamma-characteristic γ2A; a second pair of gamma-characteristics is made up of the gamma-characteristic γlB and the gamma-characteristic γ2B; and a third pair of gamma-characteristics is made up of the gamma-characteristic γ1C and the gamma-characteristic γ2C. These three pairs of gamma-characteristics are of three different types and have different characteristics from each other.

In the Office Action, the Examiner relies on Ohi for disclosing or suggesting all the features of independent claims 14 and 26. However, the Applicants assert that Ohi fails to disclose or suggest all the features now recited in independent claims 14 and 26, as amended.

Ohi discloses a liquid crystal display apparatus that includes a gamma conversion means receiving an input image signal and having a plurality of gamma characteristics, and means for controlling the gamma conversion means to switch one gamma characteristics to another at every "n" frames of the input image signal (where "n" is natural number). In Ohi, the liquid crystal display is driven on the basis of an output of the gamma conversion means.

In the Office Action, the Examiner relies specifically on Fig. 6 (and the related discussion of Fig. 6) of Ohi for disclosing or suggesting the use of gamma-characteristics. More

specifically, Ohi discloses three pairs of gamma-characteristics made up of γl and γ2 with respect to each of R, G, and B. For example, Ohi discloses the following:

"The gamma converted signals outputted from the six gamma conversion circuits 15 are fed through six inverting circuits 16 to upper and lower horizontal drivers 18 and 19 associated to an LCD panel 17.... In this case, the R, G and B signals corresponding to the same pixel are gamma-converted in accordance with the same gamma characteristics." (Emphasis added).

Additionally, Ohi also discloses the following with regard to the use of gamma-characteristics:

"*As seen from FIG. 7, for the same pixel (composed of three R, G and B pixel dots continuous in a horizontal direction), signal voltages which were converted in accordance with the same gamma characteristics and which have voltage polarities opposite to each other, are applied in two continuous frames.*" (Emphasis added).

As emphasized above, the pairs of gamma-characteristics disclosed in Ohi are gamma-characteristics pairs of the same type made up of γl and γ2, as shown in Fig. 5 and do not correspond to n pairs of gamma-characteristics different from each other, as in the present invention (as recited in independent claims 14 and 26).

Additionally, Ohi also fails to disclose or suggest "according to the transmittance to be used for display, a different pair of gamma-characteristics and a different distribution area ratio are used," as also recited in independent claims 14 and 26 (as amended). Conversely, Ohi merely discloses that the ratio between the number of red pixels to be used by γl and the number of red pixels to be used by γ2 is 1/1.

On the contrary, in the present invention (as recited in independent claims 14 and 26) a transmittance to be used for display is specified based on the input video signal. One pair of gamma-characteristics, which is correlated in advance to the range of the specified transmittance to be used for display, is selected from among the n pairs of gamma-characteristics; and an output supplied to the display panel is selected from among the outputs, which are gamma-corrected.

A ratio between a first distribution area of pixels driven by the video signal gamma-

corrected by use of the first gamma-characteristic of the selected pairs of gamma-characteristics and a second distribution area of pixels driven by the video signal gamma-corrected by use of the second gamma-characteristic of the selected pairs of gamma-characteristics is equal to a distribution area ratio specified in advance for the selected pairs of gamma-characteristics. Thus, a different pair of gamma-characteristics and a different distribution area ratio are used according to the transmittance to be used for display.

For instance, as shown in Figs. 2-4 of the Applicants' disclosure, the range of the transmittance to be used for display is divided into three ranges: a low range, an intermediate range, and a high range. If the transmittance to be used for display is in the low range, the first pair of gamma-characteristics made up of γlA and γ2A is selected.

As shown in Fig. 5A of the Applicants' disclosure, a display panel is driven so that the ratio between the distribution area of pixels to be driven using the output of the first gamma-characteristic γlA, and the distribution area of pixels to be driven using the output of the second gamma-characteristic γ2A is 1/4:3/4. If the transmittance to be used for display is in the intermediate range, the second pair of gamma-characteristics made up of γlB and γ2B is selected.

As shown in Fig. 5B of the Applicants' disclosure, the display panel is driven so that the ratio between the distribution area of pixels to be driven using the output of the first gamma-characteristic γlB, and the distribution area of pixels to be driven using the output of the second gamma-characteristic γ2B is 2/4:2/4. If the transmittance to be used for display is in the high range, the third pair of gamma-characteristics made up of γlC and γ2C is selected.

As shown in Fig. 5C of the Applicants' disclosure, the display panel is driven so that the ratio between the distribution area of pixels to be driven using the output of the first gamma-characteristic γ1C, and the distribution area of pixels to be driven using the output of the second gamma-characteristic γ2C is 3/4:1/4.

As noted above, a different pair of gamma-characteristics and a different distribution area ratio are used according to the transmittance to be used for display. Thus, the present invention (as recited in independent claims 14 and 26) provides the following advantageous effects that are not disclosed or suggested by the cited prior art:

1) Gamma-corrected video signals (by use of the first and second gamma-characteristics most suitable for a transmittance to be used for display) selected at the most suitable distribution area ratio for the transmittance to be used for display; and

2) A good viewing angle characteristic realized with respect to a broad transmittance range.

Based on the above discussion, Ohi fails to anticipate or render obvious the features of independent claims 14 and 26 (as amended). Additionally, Ohi fails to anticipate or render obvious the features of claims 15, 16 and 23-25 at least by virtue of their dependencies from independent claim 1.

In the Office Action, claims 17-22 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Ohi in view of Yamashita et al. (U.S. Publication No. 2001/0026258, hereafter "Yamashita"). Claims 17-22 depend from independent claim 14. As noted above, Ohi fails to disclose or suggest the features recited in independent claim 14 (as amended). Additionally, Yamashita fails to overcome the deficiencies noted above in Ohi.

Yamashita discloses an image display device for multi-gray scale display that includes a first pixel for transmitting an achromatic color light therethrough with a first transmittance and a second pixel for transmitting the achromatic color light therethrough with a second transmittance different from the first transmittance of the first pixel.

In the Office Action, the Examiner does not rely on Yamashita for disclosing or suggesting the use of gamma-characteristics. Regardless, after a detailed review of Yamashita the references fails to disclose or suggest at least that n pairs of gamma-characteristics are different from each other; and according to the transmittance to be used for display, the use of a different pair of gamma-characteristics and a different distribution area ratio, as recited in independent claim 14 (as amended).

Accordingly, no combination of Ohi and Yamashita would result in, or otherwise render obvious, claims 17-22 at least by virtue of their dependencies from independent claim 14.

In light of the above, the Applicants submit that all the pending claims are patentable over the prior art of record. The Applicants respectfully request that the Examiner withdraw the

rejections presented in the outstanding Office Action, and pass the present application to issue. The Examiner is invited to contact the undersigned attorney by telephone to resolve any remaining issues.

Respectfully submitted,

Katsuyuki ARIMOTO et al.
/Mark D. Pratt/
By: 2009.12.03 14:49:32 -05'00'
Mark D. Pratt
Registration No. 45794
Attorney for Applicants

MDP/ats
Washington, D.C. 20005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
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